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In re Application of: Mi-Sook NAM, *et al.*	)	Confirmation No. 3882
Application No.: 10/603,990	)	Group Art Unit: 2871
Filed: June 26, 2003	)	Examiner: A. Schechter
For: TRANSREFLECTIVE LIQUID CRYSTAL DISPLAY DEVICE AND FABRICATING METHOD THEREOF HAVING UNEVEN PATTERNS CONSISTING OF ORGANIC MATERIAL IN THE REFLECTIVE PORTION *(as amended)*	)	

Commissioner for Patents
Customer Window, Mail Stop <u>Amendment</u>
U.S. Patent and Trademark Office
Alexandria, VA 22314

Sir:

SUBMISSION OF TRANSLATION OF PRIORITY DOCUMENT

Applicants attach hereto an English translation of Korean Patent application No. 2002-0088387 filed in Korea on December 21, 2002, to which priority is claimed in the above-identified patent application. The declaration of Mr. Tae-Ho Ha attached to the translation constitutes a statement that the translation is accurate in accordance with 37 C.F.R. § 1.55(a)(4)(ii).

Applicants believe that no fees are due in connection with the filing of this paper. However, if there are any fees due in connection with the filing of this paper, please charge the fees to our Deposit Account No. 50-0310. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

MORGAN, LEWIS & BOCKIUS LLP

Dated: August 20, 2007

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VERIFICATION OF A TRANSLATION

I, the below named translator, hereby declare that:

My name and post office address are as stated below;

That I am knowledgeable in the English language and in the Korean language and believe the attached English translation to be a true and complete translation of the below identified document; and

The document for which the attached English translation is being submitted is Korean Patent Application No. 2002-0088387.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Signature of the Translator: Tae-Ho Ha

Date: 17th day of August, 2007

KOREAN INTELLECTUAL

PROPERTY OFFICE

This is to certify that the following application annexed hereto

is a true copy from the records of the Korean Intellectual Property Office

Application Number : **PATENT-2002-0088387**

Date of Application : **December 31, 2002**

Applicant(s) : **LG. Philips LCD Co., Ltd.**

COMMISSIONER

[PATENT APPLICATION]

[REFERENCE NUMBER] 0111

[CLASSIFICATION] PATENT

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[ATTORNEY CORD] 9-1998-000534-2

[ALL-INCLUSIVE AUTHORIZATION REGISTRATION NUMBER] 1999-001832-7

[TITLE OF INVENTION IN KOREAN] 반사투과형 액정표시장치용 어레이기판과 그 제조방법

[TITLE OF INVENTION IN ENGLISH] Method for fabricating a Transflective liquid crystal display device and the same

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[EXAMINATION] Request

We submit to Commissioner as above.

Attorney Jung, Won-Ki (seal)

[FEES]

[BASIC APPLICATION FEE]	0 pages	38,000	Won
[ADDITIONAL APPLICATION FEE]	32 pages	0,000	Won
[PRIORITY FEE]	0 things	0	won
[EXAMINATION REQUEST FEE]	12 clamis	493,000	Won
[TOTAL]		534,000	Won

[ENCLOSED] 1. Abstract, Specifications (with Drawings) – 1 set

[DOCUMENT OF ABSTRACT]

[ABSTRACT]

The present invention relates to a liquid crystal display device, and more particularly, a transflective liquid crystal display device, where a reflective portion and a transmissive portion are formed in a pixel region, and a method of fabricating the same.

It is important that a cell gap of the transmissive portion is twice of a cell gap of the reflective portion to maximize light efficiency of the reflective portion and the transmissive portion when fabricating the transflective liquid crystal display device. In the prior art, since a transmissive hole having a desired height is formed by exposure and development for a BCB organic insulating layer corresponding to the transmissive portion using a photoresist and then dry-etching it, there is a disadvantage that processes are troublesome, and in addition, an additional photolithography is required to form an uneven reflective electrode to improve an reflection efficiency of the reflective electrode.

However, in the present invention, the uneven reflective electrode is formed using first and second photosensitive organic material and the transmissive hole having a desired height is formed by eliminating the first and second photosensitive organic material, and thus, fabrication process is simplified more than before. Therefore, the present invention contributes to production yield.

[REPRESENTATIVE FIGURE]

FIG. 8

[INDEX WORDS]

Trasnflective liquid crystal display device, uneven reflective structure (MRS), dual cell gap

[SPECIFICATIONS]

[NAME OF INVENTION]

Method for fabricating a transflective liquid crystal display device and the same

[BRIEF EXPLANATION OF FIGURES]

FIG. 1 is an exploded perspective view showing a conventional transflective LCD device.

FIG. 2 is a schematic cross-sectional view showing a part of the conventional transflective LCD device.

FIG. 3 is an enlarged plane view showing some pixels of an array substrate for the prior art transflective LCD device.

FIGs. 4a to 4d are cross-sectional views taken along lines II-II, III-III and IV-IV of FIG. 3 and shown by process order.

FIG. 5 is a cross-sectional view showing the prior art transflective LCD device including the array substrate of FIG. 4d and an upper substrate.

FIG. 6 is a plan view showing some pixels of an array substrate for a transflective LCD device according to the present invention.

FIGs. 7a to 7h are cross-sectional views taken along a line VII-VII of FIG. 6 shown by process order.

FIG. 8 is a cross-sectional view of the transflective LCD device, which includes the array substrate of FIG. 7h and an upper substrate, according to the present invention.

* Explanation of major parts in the figures *

100 : substrate 138 : first insulating layer

142 : source electrode

144 : drain electrode

152 : second insulating layer

155 : first photosensitive organic layer

158 : second photosensitive organic layer

165 : reflective electrode

167 : pixel electrode

[DETAILED DESCRIPTION OF INVENTION]

[OBJECT OF INVENTION]

[TECHNICAL FIELD OF THE INVENTION AND PRIOR ART OF THE FIELD]

The present invention relates to a liquid crystal display device, and more particularly, to a transflective liquid crystal display device selectively using a reflective mode and a transmissive mode.

Generally, transflective liquid crystal display (LCD) devices function as both transmissive and reflective LCD devices. Since the transflective LCD devices can use both a backlight and the exterior natural or artificial light, the transflective LCD devices are not restricted from the circumstances.

In addition to these advantages, there is an advantage of reducing power consumption.

FIG. 1 is an exploded perspective view showing a conventional transflective LCD device.

As shown, a conventional transflective LCD device 29 includes an upper substrate 29 where a black matrix 19 and a transparent common electrode 13 on a sub-color filter 17 are formed, and a lower substrate 30 where a pixel region P, a pixel electrode which includes a reflective electrode 52 including a transmissive hole A in the pixel region and a transparent

electrode 64 and a region except for the transmissive hole A functions as a reflective portion C, a switching element T and array lines 34 and 36 are formed. A liquid crystal 23 is interposed between the upper substrate 15 and the lower substrate 30.

FIG. 2 is a cross-sectional view showing the conventional transflective LCD device.

As shown, a schematic transflective LCD device 29 includes an upper substrate 15 where a common electrode 13 is formed, a lower substrate 30 where a pixel electrode including a reflective electrode 52 including a transmissive hole (transmissive portion) A and a transparent electrode 64 on or below the reflective electrode, a liquid crystal 23 between the upper substrate 15 and the lower substrate 30, and a backlight 41 below the lower substrate 30.

When the transflective LCD device 29 is used in a reflective mode, exterior natural or artificial light is used as almost of light.

Operations of the LCD device in a reflective mode and a transmissive mode are explained with reference to the above-mentioned.

In a reflective mode, the LCD device uses the exterior natural or artificial light. Light "B" incident on the upper substrate 15 is reflected at the reflective electrode 52 and then passes through the liquid crystal 23 aligned by an electric field by the reflective electrode and the common electrode 13. Images are displayed by modulating an intensity of the light "B" passing through the liquid crystal according to the alignment of the liquid crystal 23.

To the contrary, in a transmissive mode, light "F" from the backlight unit 41 under the lower substrate 21 is used. The light emitted from the backlight unit 41 enters the liquid crystal layer 23 through the transparent electrode 64. An intensity of the light from the backlight unit 41 by the liquid crystal layer 23 aligned by an electric field by the transparent electrode 64 below the transmissive hole and the common electrode 13 is modulated, and thus images are displayed.

FIG. 3 is an enlarged plane view showing a part of an array substrate of the lower substrate.

The substrate 30 is referred to as an array substrate, where A thin film transistor T, which is a switching element, is disposed in a matrix manner. A gate line 34 and a data line 46 crossing each other near the thin film transistors are formed.

A pixel region P is a region defined by cross of the gate line 34 and the data line 46.

A storage capacitor S is formed over a part of the gate line 34, and electrically connected in parallel to a transflective electrode 52 and 64 on the pixel region P.

A gate pad 36 and a data pad 48 are formed at one ends of the gate line 34 and the data line 46, respectively.

The TFT "T" includes a gate electrode 32, a source electrode 42, a drain electrode 44, and an active layer 40 over the gate electrode 32.

A method of fabricating the LCD device of FIG. 3 is explained by process with reference to FIGs. 4a to 4d.

FIGs. 4a to 4d are cross-sectional views taken along lines II-II, III-III and IV-IV of FIG. 3 and shown by process order.

FIG. 4a shows a gate electrode and a semiconductor layer formed through a first mask process and a second mask process.

A conductive metal is deposited on a substrate 30 and patterned in a first mask process to form a gate electrode 32, a gate line (34 of FIG. 3) and a gate pad 36 with a predetermined area at one end of the gate line. Then, a gate insulating layer 38 is formed on the substrate 30 where the gate electrode 32 and the like are formed.

Subsequently, a semiconductor layer 40 including an active layer 40a of amorphous silicon and an ohmic contact layer 40b of impurity-doped amorphous silicon with an island shape and overlapping each other in plane is formed on the gate insulating layer 38.

FIG. 4b shows source and drain electrodes formed through a third mask process, and a reflecting plate formed through a fourth mask process.

A conductive metal is deposited on the ohmic contact layer 40b and patterned to form source and drain electrodes 42 and 44 at both sides of the active layer 40a, respectively, a data line connected to the source electrode 42, and a data pad 48 with a predetermined area at one end of the data line 46.

Although not shown, a source-drain metal layer (50 of FIG. 3) of an island shape is formed over a part of the gate line (34 of FIG. 3). The source-drain metal layer may not be formed.

A insulating material is deposited on the substrate 30, where the source and drain electrodes 42 and 44 and the like are formed, to form a second insulating layer 48.

Subsequently, in a fourth mask process, a metallic material having a high reflectance such as aluminum (Al) is deposited on the second insulating layer 50 and patterned to form a reflecting plate 52 including a transmissive hole A corresponding to a part of the pixel region P.

FIG. 4c shows a fourth mask process. An insulating material is deposited on an entire surface of the reflecting plate 52 to form a third insulating layer. The first to third insulating layers 38, 48 and 54 are simultaneously patterned to form a drain contact hole 56 exposing a part of the drain electrode 44, a etching hole 58 corresponding to a transmissive hole A formed in the reflective plate 52, a gate pad contact hole 60 exposing a part of the gate pad 36, and a data pad contact hole 62 exposing a part of the data pad 48.

FIG. 4d shows a pixel electrode, a gate pad electrode and a data pad electrode formed through a sixth mask process.

In detail explanation, a transparent conductive metallic material is deposited on the passivation layer 54 having the plurality of contact holes and patterned in a sixth mask process to form a pixel electrode 64 in the pixel region P and contacting the exposed drain electrode 44, and at the same time, a gate pad electrode 66 and a data pad electrode 68 contacting the exposed gate pad 36 and data pad 48, respectively, and having a island shape.

Through the above-described six mask processes, the transflective LCD device according to the prior art can be fabricated.

FIG. 5 is a cross-sectional view showing the prior art transflective LCD device including the array substrate of FIG. 4d and an upper substrate.

As shown, in the prior art transflective LCD device, a cell gap 2d of a transmissive portion is twice of a cell gap d of a reflective portion. This is to improve the light efficiency of the transmissive portion and the reflective portion. In other words, in the transflective LCD device, the cell gaps of the transmissive portion and the reflective portion are different to improve the light efficiency of the transmissive portion and the reflective portion. For this, so far, two methods have been known.

The first method is to make the cell gaps of the transmissive portion and the reflective portion different by forming a dual cell gap in the array substrate, and the second method is to make the cell gaps of the transmissive portion and the reflective portion different by forming a dual cell gap in an color filter of the upper substrate. Recently, a method to make the cell gap of the transmissive portion twice of the cell gap of the reflective portion from the both methods is mainly used.

However, as shown in FIG. 5, even though the prior art transflective LCD device meets the requirement that the cell gap 2d of the transmissive portion is twice of the cell gap of the reflective portion, there is a problem in reflection efficiency because a reflective electrode is a flat mirror type. In other words, when the reflective electrode is an uneven surface type instead of the flat mirror type, the reflection efficiency of the reflective portion increases due to scattering phenomenon that occurs on a surface of the reflective electrode. Accordingly, it is preferred to form the surface of the reflective electrode corresponding to the reflective portion with unevenness to improve the reflection efficiency of the reflective portion.

Therefore, it is required to solve the problem of increasing light efficiency of the reflective portion and the transmissive portion in the prior art LCD device, and in addition to this, the problem of forming the reflective electrode with unevenness to improve the reflection efficiency of the reflective electrode.

[TECHNICAL SUBJECT OF INVENTION]

To resolve the above-mentioned problems, the present invention realizes a desired cell gap of a transmissive portion by forming unevenness of a reflective electrode using a photosensitive organic layer and forming a step at the transmissive portion by removing the photosensitive organic layer corresponding to the transmissive portion.

[CONSTRUCTION AND OPERATION OF INVENTION]

To achieve the above objects, a transflective liquid crystal display device according to the present invention includes a substrate where a reflective portion and a transmissive portion are defined; array elements including thin film transistors on the substrate; a first

uneven pattern formed of a photosensitive organic material on the substrate where the array elements are formed, wherein a portion of the first uneven pattern corresponding to the reflective portion has a uneven shape and a portion of the first uneven pattern corresponding to the transmissive portion is eliminated; a second uneven pattern formed of a photosensitive organic material on an entire surface of the substrate where the first uneven pattern is formed, wherein a portion of the second uneven pattern corresponding to the first uneven pattern has an uneven shape due to the first uneven pattern and a portion of the second uneven pattern corresponding to the transmissive portion is eliminated; and a reflective electrode formed on the second uneven pattern corresponding to the reflective portion.

The array substrate for the transflective liquid crystal display device further includes an inorganic insulating layer selected among silicon oxide (SiO_2) and silicon nitride ($SiNx$) on the substrate where the array elements are formed.

The array substrate for the transflective liquid crystal display device further includes a pixel electrode formed on the reflective electrode.

The array substrate for the transflective liquid crystal display device further includes a drain contact hole, a storage contact hole, a gate pad contact hole and a data pad contact hole formed by eliminating the second uneven pattern at the same time of eliminating the portion of the second uneven pattern corresponding to the transmissive portion.

The photosensitive organic material is a photo-acrylic resin.

A cell gap corresponding to the transmissive portion is twice of a cell gap corresponding to the reflective portion with respect to the liquid crystal display device.

A method of fabricating an array substrate for a transflective liquid crystal display device according to the present invention includes preparing a substrate where a reflective portion and a transmissive portion are defined; forming array elements including thin film

transistors on the substrate; forming a first photosensitive organic layer using a photosensitive organic material on the substrate where the array elements are formed and forming a first uneven pattern by performing exposure and development for the first photosensitive organic layer, wherein a portion of the first uneven pattern corresponding to the reflective portion has a uneven shape and a portion of the first uneven pattern corresponding to the transmissive portion is eliminated; forming a second photosensitive organic layer using a photosensitive organic material on an entire surface of the substrate where the first uneven pattern is formed and forming a second uneven pattern by performing exposure and development for the second photosensitive organic layer, wherein a portion of the second uneven pattern corresponding to the reflective portion has an uneven shape due to the first uneven pattern and a portion of the second uneven pattern corresponding to the transmissive portion is eliminated; and forming a reflective electrode having an uneven shape on the second uneven pattern corresponding to the reflective portion.

The method fabricating the array substrate for the transflective liquid crystal display device further includes forming an inorganic insulating layer selected among silicon oxide (SiO_2) and silicon nitride (SiNx) on an entire surface of the substrate where the array elements are formed before forming the first uneven pattern.

The method fabricating the array substrate for the transflective liquid crystal display device further includes forming a pixel electrode formed on the substrate where the reflective electrode having an uneven shape is formed.

The method fabricating the array substrate for the transflective liquid crystal display device further includes forming a drain contact hole, a storage contact hole, a gate pad contact hole and a data pad contact hole formed by eliminating the second uneven pattern at the same

time of eliminating the portion of the second uneven pattern corresponding to the transmissive portion.

The photosensitive organic material is a photo-acrylic resin.

A cell gap corresponding to the transmissive portion is twice of a cell gap corresponding to the reflective portion with respect to the liquid crystal display device.

Hereinafter, a desirable embodiment according to the present invention is explained with reference to the accompanying drawings.

FIG. 6 is a plan view showing some pixels of an array substrate for a transflective LCD device according to the present invention.

As shown, a gate line 122 and a data line 146 are formed on an array substrate 300. The gate line 122 and the data line 146 cross each other and define a pixel region P. A thin film transistor T including a gate electrode 132, an active layer 140b, and source and drain electrodes 142 and 144, is formed at a cross portion of the gate line 122 and the data line 146. The gate electrode 132 is connected to the gate line 122, and the source electrode 142 is connected to the data line 146.

Hereinafter, a structure of the transflective LCD device and a method of fabricating the same according to the present invention are explained with reference to the accompanying drawings.

FIGs. 7a to 7h are cross-sectional views taken along a line VII-VII of FIG. 6 shown by process order.

As shown in FIG. 7a, a gate electrode 132 is formed on a transparent insulating substrate 100 by depositing and patterning a conductive metallic material layer such as

aluminum (Al), chromium (Cr), and molybdenum (Mo). Although not shown, the gate line (122 of FIG. 6) connected to the gate electrode is formed at the same time. Subsequently, a first insulating layer 138 is formed by depositing or coating one of an inorganic insulating material group including silicon nitride (SiN_x) and silicon oxide (SiO_2). Subsequently, a semiconductor layer 140 including an active layer 140b of intrinsic amorphous silicon and an ohmic contact layer 140a of impurity-doped amorphous silicon is formed on the first insulating layer 138 over the gate electrode 132. Subsequently, source and drain electrodes 142 and 144 are formed on the semiconductor layer 140 using the conductive metallic layer such as aluminum (Al), chromium (Cr), and molybdenum (Mo). The source and drain electrodes 142 and 144 are spaced apart from each other. The source electrode 142 is electrically connected to the data line (146 of FIG. 6).

Subsequently, as shown in FIG. 7b, a second insulating layer 152 is formed on the entire surface of the substrate 100 having the source and drain electrodes 142 and 144 using an inorganic insulating material such as silicon nitride (SiN_x) and silicon oxide (SiO_2).

Subsequently, as shown in FIG. 7c, a first photosensitive organic layer 155 is formed on the entire surface of the substrate having the second insulating layer 152 using a photosensitive organic material. It is preferred to use a photo-acrylic resin as the photosensitive organic material for the first photosensitive organic layer 155. The photosensitive organic material includes a positive type, a light-irradiated portion of which is removed through a developing process, and a negative type, a non-light-irradiated portion of which is removed. Here, the negative type of the photosensitive organic material is explained as an example. Accordingly, a transmissive region A of the mask 160 corresponds to a reflective portion R of the array substrate, and a shielding region B of the mask 160 corresponds to a transmissive portion T and other regions except for the reflective portion R.

The second insulating layer as described in FIGs. 7b and 7c may be omitted, and in this case, the photosensitive organic layer 155 may be formed on the entire surface of the substrate 100 having the source and drain electrodes.

As shown in FIG. 7d, uneven photosensitive organic patterns 155a having a rectangular shape in the reflective portion R of the array substrate are formed through a photolithography of irradiating light on the first photosensitive organic layer 155 using the mask 160. At the same time, the first photosensitive organic layer 155 corresponding to the transmissive portion T of the array substrate is eliminated. At this time, the other regions except for the transmissive portion T and the reflective portion R are eliminated.

As shown in FIG. 7e, the uneven patterns 155a having a rectangular shape are melted and hardened, so that uneven embossing patterns 155b having a round top surface are formed. However, these uneven patterns 155b can be obtained through an exposure and development process of the first photosensitive organic layer 155 using a mask having a plurality of slits.

Subsequently, a second photosensitive organic layer 158 is formed on the entire surface of the substrate having the uneven embossing patterns 155b using a photosensitive organic material, and more desirably, a photo-acrylic resin. As shown in FIG. 7f, the second photosensitive organic layer 158 on the uneven embossing patterns 155b has an uneven shape. In this step, it is important to coat the organic material of a thickness range making use of the uneven shape of the uneven patterns 155b, and the material for the second photosensitive organic layer is desirably a photo-acrylic resin.

In this step, a hole h1 formed corresponding to a drain contact hole (not shown) electrically connecting a pixel electrode after forming the drain electrode 144 to the drain electrode 144 and a hole h2 for the transmissive portion T are formed. In other words, the second photosensitive organic layer 158 corresponding to the reflective portion has the

uneven shape according to the uneven patterns 155b, and at the same time, the second photosensitive organic layer 158 corresponding to the transmissive portion T is eliminated. Also, although not shown, to electrically connect a storage electrode to a pixel electrode, a gate pad electrode to a pixel electrode, and a data pad electrode to a pixel electrode, the second photosensitive organic layer 158 corresponding to a storage contact hole, a gate pad contact hole and a data pad contact hole exposing the storage electrode, the gate pad electrode and the data pad electrode, respectively, is eliminated.

Subsequently, as shown in FIG. 7g, a data contact hole h3 is formed by etching the second insulating layer 152 corresponding to a position where the data contact hole is formed.

Subsequently, as shown in FIG. 7h, an uneven reflective electrode 165 is formed by depositing and patterning a metallic material having a high reflectance, such as aluminum (Al), at a position corresponding to the second uneven photosensitive organic layer 158.

Subsequently, a pixel electrode 167 is formed on the uneven reflective electrode 165 using a transparent conductive metallic material such as indium-tin-oxide (ITO).

FIG. 8 is a cross-sectional view of the transflective LCD device, which includes the array substrate of FIG. 7h and an upper substrate, according to the present invention.

As shown, the transflective LCD device includes a lower substrate, where a thin film transistor array element, the uneven reflective electrode 165 and a pixel electrode 167 thereon are formed, and an upper substrate spaced apart from the lower substrate and including a black matrix corresponding to a thin film transistor of the lower substrate 100 and a color filter 220.

As shown in FIG. 8, differently from the prior art transflective LCD device where making a difference of a cell gap of the transmissive portion and a cell gap of the reflective portion is obtained by forming a step in the transmissive portion by removing an organic

insulating layer of the transmissive portion, the transflective LCD device according to the present invention improves light efficiency of the reflective portion and the transmissive portion by making a cell gap 2d of the transmissive portion more than a cell gap d of the reflective portion by removing a photosensitive organic material corresponding to the transmissive portion at the same time of forming the reflective electrode having an uneven shape using the photosensitive organic material.

[EFFECT OF INVENTION]

The transflective LCD device according to the present invention improves reflection efficiency by forming the reflective electrode having an uneven shape using a photo-acrylic resin of a photosensitive organic material and light efficiency of the reflective portion and the transmissive portion by making a cell gap of the transmissive portion twice of a cell gap d of the reflective portion by etching the photosensitive organic layer corresponding to the transmissive portion.

Accordingly, since the dual cell gap and the uneven reflective electrode are simultaneously formed compared to the prior art, the fabricating process is simplified. As a result, the production yield can be improved.

[RANGE OF CLAIMS]

[CLAIM 1]

An array substrate for a transflective liquid crystal display device, comprising:

a substrate where a reflective portion and a transmissive portion are defined;

array elements including thin film transistors on the substrate;

a first uneven pattern formed of a photosensitive organic material on the substrate where the array elements are formed, wherein a portion of the first uneven pattern corresponding to the reflective portion has a uneven shape and a portion of the first uneven pattern corresponding to the transmissive portion is eliminated;

a second uneven pattern formed of a photosensitive organic material on an entire surface of the substrate where the first uneven pattern is formed, wherein a portion of the second uneven pattern corresponding to the first uneven pattern has an uneven shape due to the first uneven pattern and a portion of the second uneven pattern corresponding to the transmissive portion is eliminated; and

a reflective electrode formed on the second uneven pattern corresponding to the reflective portion.

[CLAIM 2]

The array substrate according to claim 1, further comprising an inorganic insulating layer selected among silicon oxide (SiO_2) and silicon nitride (SiNx) on the substrate where the arrray elements are formed.

[CLAIM 3]

The array substrate according to claim 1, further comprising a pixel electrode formed on the reflective electrode.

[CLAIM 4]

The array substrate according to claim 1, further comprising a drain contact hole, a storage contact hole, a gate pad contact hole and a data pad contact hole formed by eliminating the second uneven pattern at the same time of eliminating the portion of the second uneven pattern corresponding to the transmissive portion.

[CLAIM 5]

The array substrate according to claim 1, wherein the photosensitive organic material is a photo-acrylic resin.

[CLAIM 6]

The array substrate according to claim 1, wherein a cell gap corresponding to the transmissive portion is twice of a cell gap corresponding to the reflective portion with respect to the liquid crystal display device.

[CLAIM 7]

A method of fabricating an array substrate for a transflective liquid crystal display device, comprising:

preparing a substrate where a reflective portion and a transmissive portion are defined;

forming array elements including thin film transistors on the substrate;

forming a first photosensitive organic layer using a photosensitive organic material on the substrate where the array elements are formed and forming a first uneven pattern by performing exposure and development for the first photosensitve organic layer, wherein a portion of the first uneven pattern corresponding to the reflective portion has a uneven shape and a portion of the first uneven pattern corresponding to the transmissive portion is eliminated;

forming a second photosensitive organic layer using a photosensitive organic material on an entire surface of the substrate where the first uneven pattern is formed and forming a second uneven pattern by performing exposure and development for the second photosensitve organic layer, wherein a portion of the second uneven pattern corresponding to

the reflective portion has an uneven shape due to the first uneven pattern and a portion of the second uneven pattern corresponding to the transmissive portion is eliminated; and

forming a reflective electrode having an uneven shape on the second uneven pattern corresponding to the reflective portion.

[CLAIM 8]

The method according to claim 7, further comprising forming an inorganic insulating layer selected among silicon oxide (SiO_2) and silicon nitride (SiNx) on an entire surface of the substrate where the array elements are formed before forming the first uneven pattern.

[CLAIM 9]

The method according to claim 7, further comprising forming a pixel electrode formed on the substrate where the reflective electrode having an uneven shape is formed.

[CLAIM 10]

The method according to claim 7, further comprising forming a drain contact hole, a storage contact hole, a gate pad contact hole and a data pad contact hole formed by eliminating the second uneven pattern at the same time of eliminating the portion of the second uneven pattern corresponding to the transmissive portion.

[CLAIM 11]

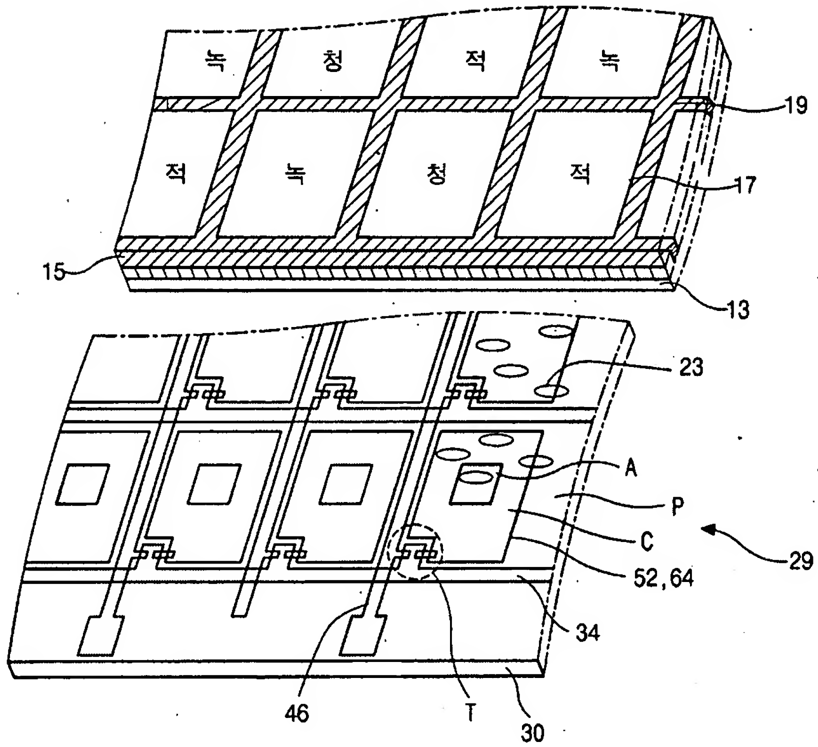
The method according to claim 7, wherein the photosensitive organic material is a photo-acrylic resin.

[CLAIM 12]

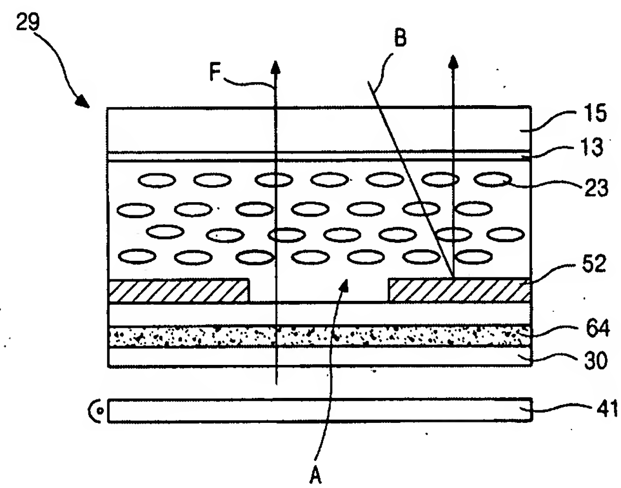
The method according to claim 7, wherein a cell gap corresponding to the transmissive portion is twice of a cell gap corresponding to the reflective portion with respect to the liquid crystal display device.

[DRAWINGS]

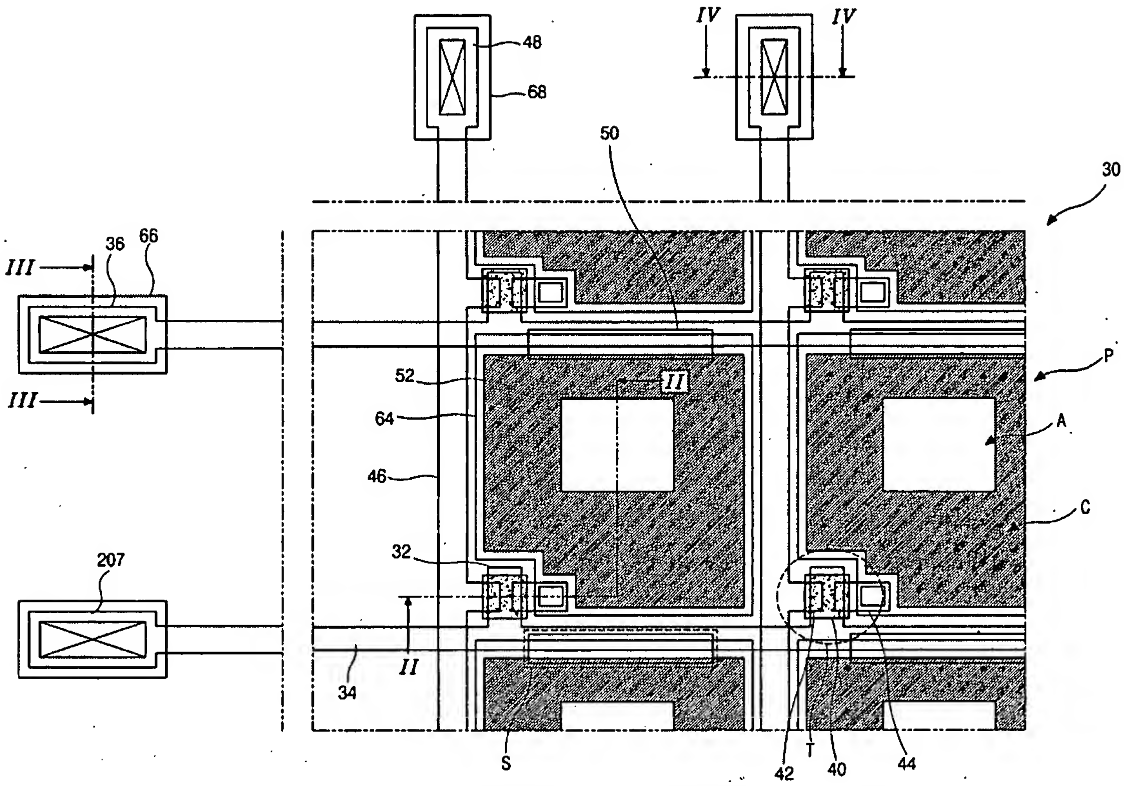
【FIG. 1】



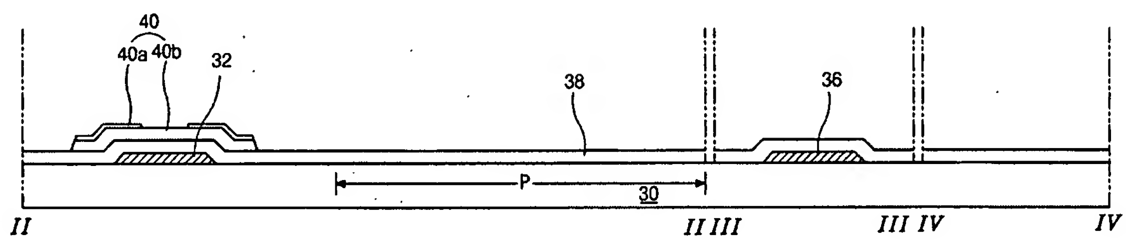
【FIG. 2】



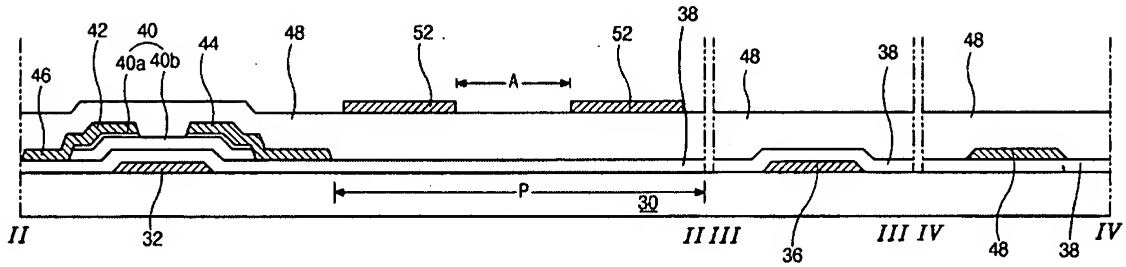
【FIG. 3】


48
68
IV
IV
50
30
36
66
III
III
52
64
46
32
207
34
II
II
P
A
C
S
42
T
40
44

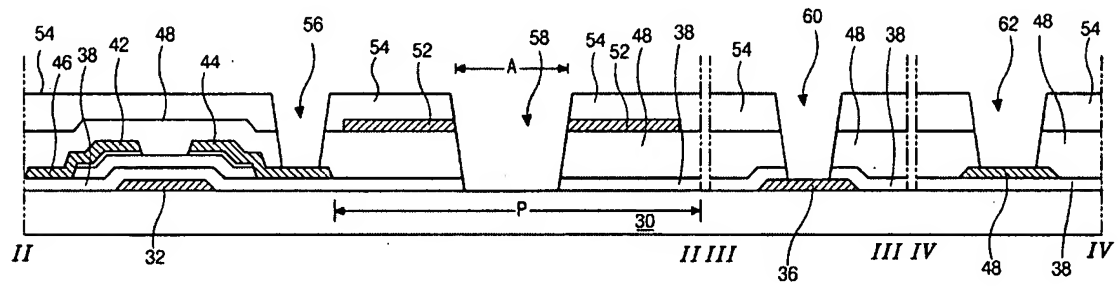
【FIG. 4a】


40
40a
40b
32
38
36
P
30
II
II III
III IV
IV

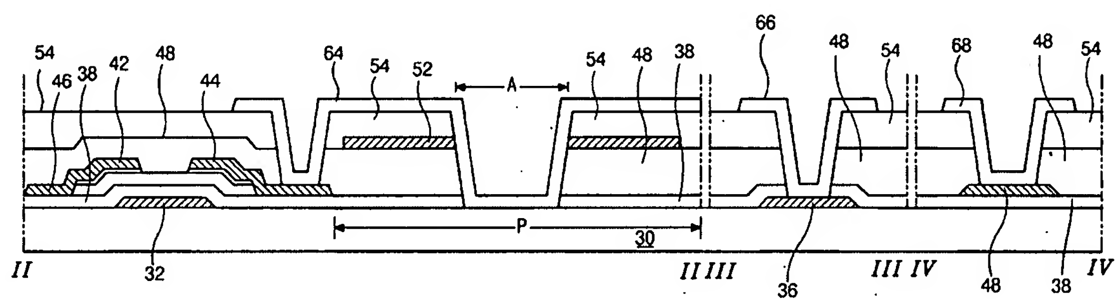
【FIG. 4b】



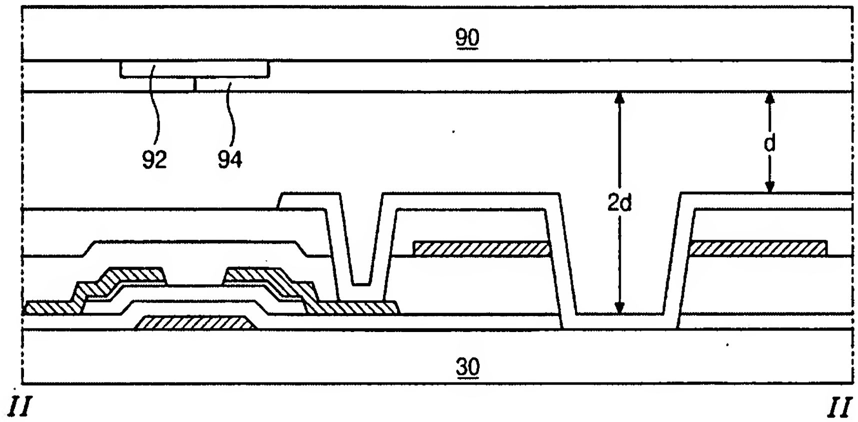
【FIG. 4c】



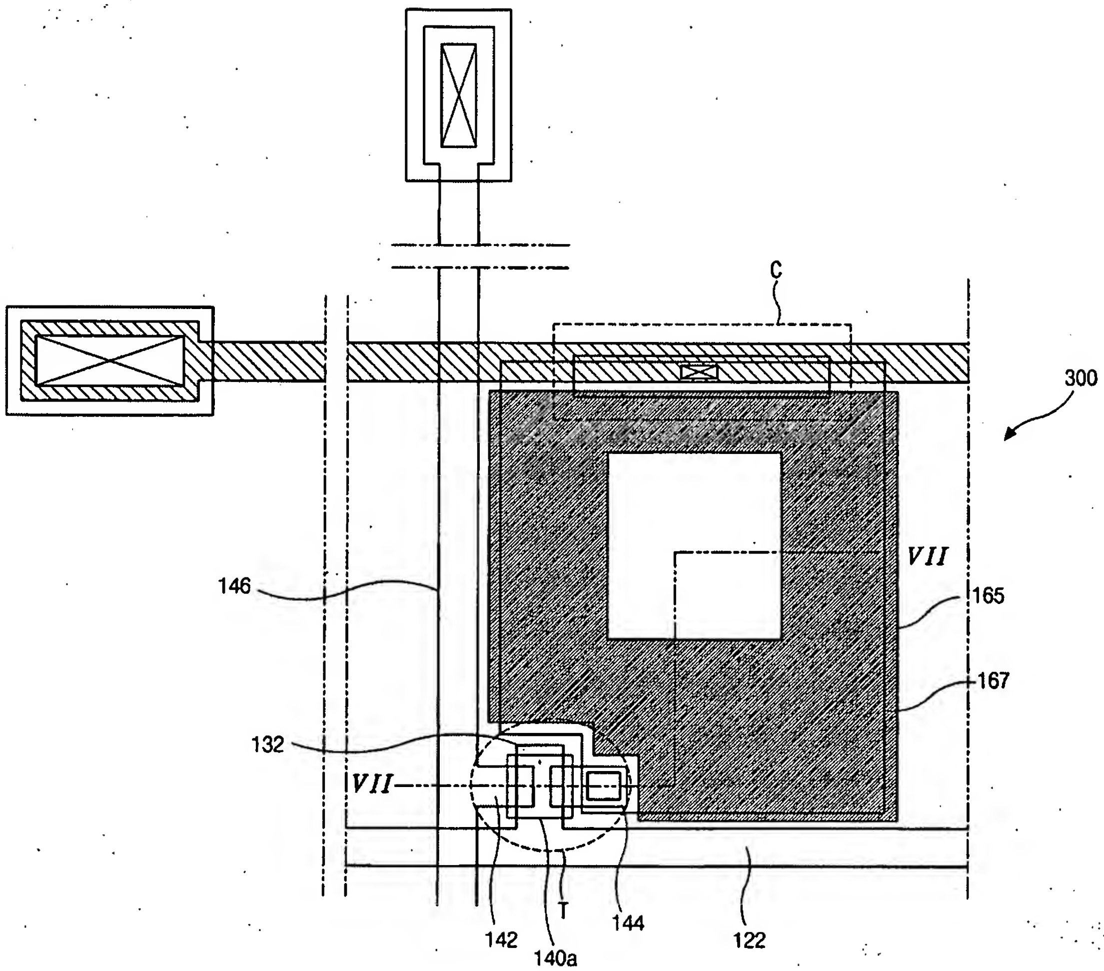
【FIG. 4d】



【FIG. 5】

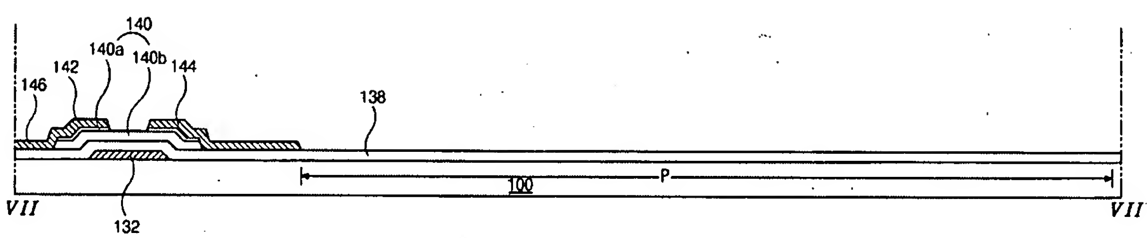


【FIG. 6】



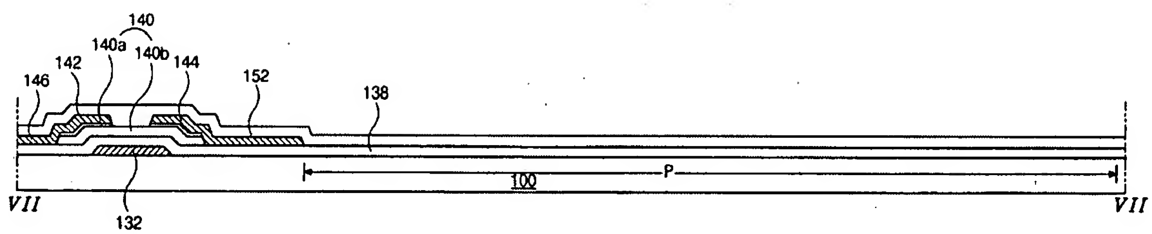
C
300
VII
165
167
146
132
VII
142
140a
T
144
122

【FIG. 7a】

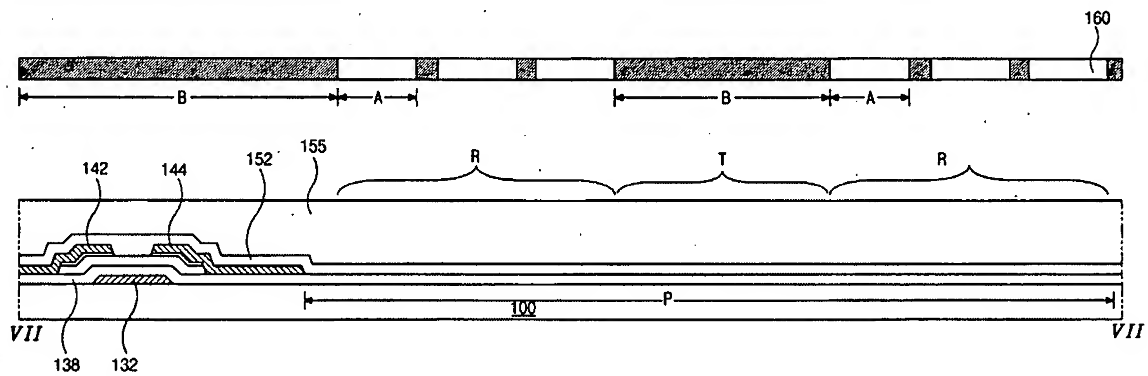


140
140a
140b
142
144
146
138
100
P
VII
132
VII

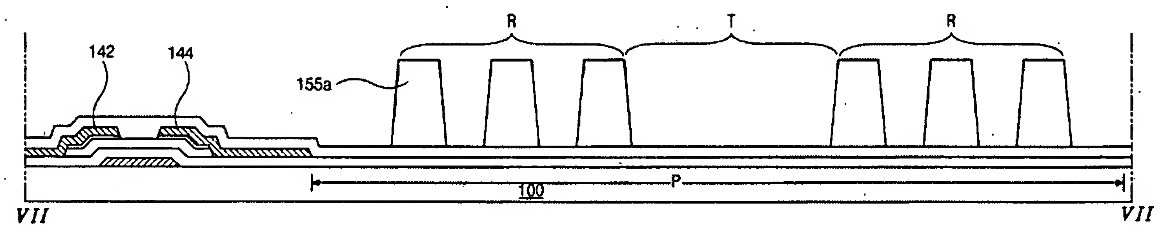
【FIG. 7b】



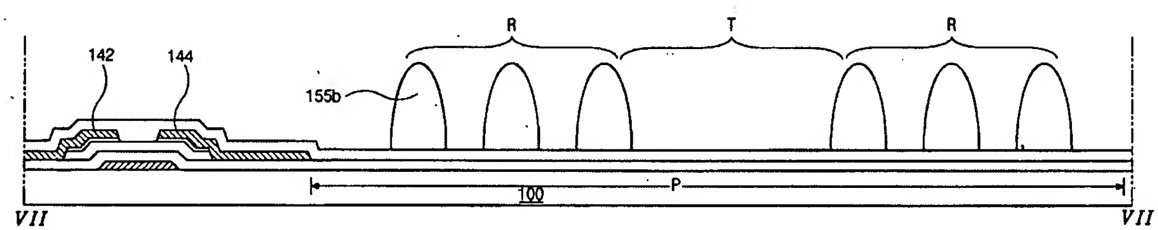
【FIG. 7c】



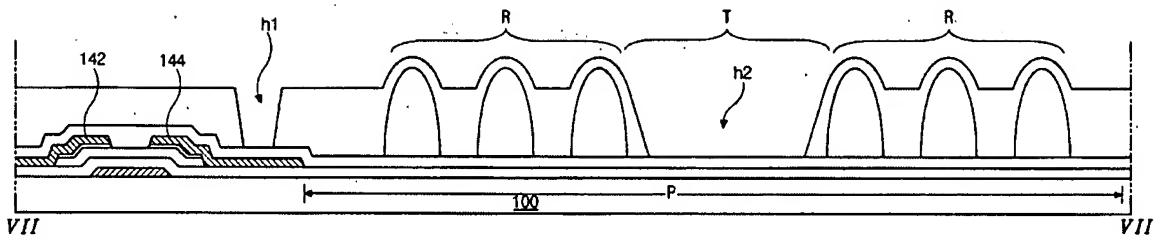
【FIG. 7d】



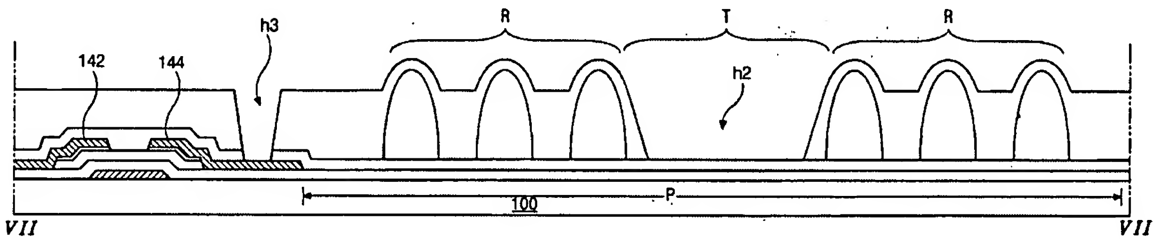
【FIG. 7e】



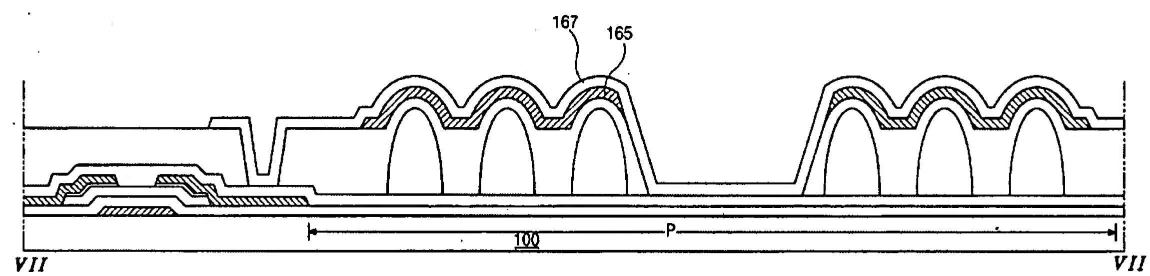
【FIG. 7f】



【FIG. 7g】



【FIG. 7h】



【FIG. 8】